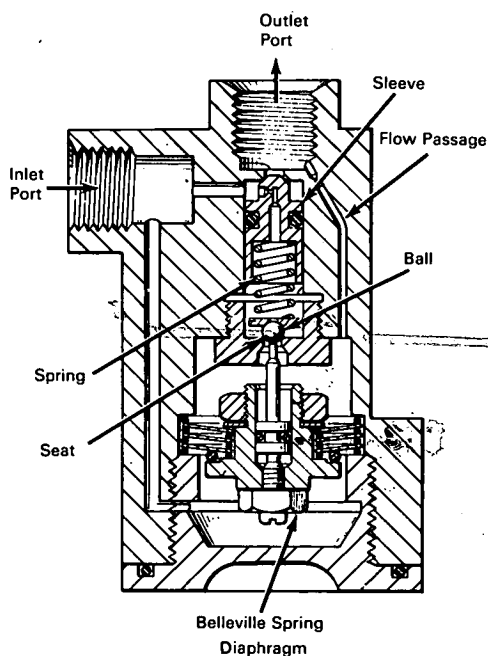


NASA TECH BRIEF



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Dual Rate Pressure Relief Valve



A pressure relief valve has been designed to vent at a slow bleed rate at one pressure level and at a higher bleed rate at a higher pressure level. The valve housing is bored to receive a sleeve that is free to slide back and forth if unrestrained and which closes off or opens a passage between inlet port and outlet port, depending upon its position. An orifice in the sleeve routes the inlet fluid to a ball and seat arrangement which communicates with a flow passage leading to the outlet port. A conventional spring retains the sleeve and the ball/seat arrangement normally closed. A belleville spring diaphragm assembly attached to a shaft in contact with the ball senses pressure differential between inlet port and outlet port and deflects at a preset inlet pressure to unseat the ball and

permit a slow bleed-off to maintain system pressure at the design level. In the event of a surge in inlet pressure too great for the ball seat orifice to handle, pressure across the sleeve valve element overcomes the tension in the conventional spring to a point that unseats the sleeve valve element to permit a much greater volume of flow and thus quickly return system pressure to the design level.

Note:

Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B68-10237

(continued overleaf)

Patent status:

No patent action is contemplated by NASA.

Source: Johannes Steeneken
of The Garrett Corporation
under contract to
Manned Spacecraft Center
(MSC-11606)

IS-CAS-42D
RM. 1313

KSC HQS.